

A Section

Cold-War Doctrines Refuse to Die; False Alert After '95 Rocket Launch Shows Fragility of Aging Safeguards

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First of two articles

At dawn on the morning of Jan. 25, 1995, a four-stage Norwegian-U.S. joint research rocket, Black Brant XII, lifted off from an island off Norway's northwest coast. Ninety-three seconds after launch, the fourth stage burned out, hurling the rocket and its payload nearly straight up.

The rocket was designed to study the Northern Lights, but when it rose above the horizon, it turned into another kind of experiment -- a test of the hair-trigger posture that still dominates the control of Russian and United States nuclear weapons.

The rocket was spotted by Russian early-warning radars. The radar operators sent an alert to Moscow. Within minutes, President Boris Yeltsin was brought his black nuclear-command suitcase. For several tense minutes, while Yeltsin spoke with his defense minister by telephone, confusion reigned.

Little is known about what Yeltsin said, but these may have been some of the most dangerous moments of the nuclear age. They offer a glimpse of how the high-alert nuclear-launch mechanism of the Cold War remains in place, and how it could go disastrously wrong, even though the great superpower rivalry has ended.

Russia and the United States still rely on a doctrine that calls for making rapid-fire decisions about a possible nuclear attack. If a Russian president wants to retaliate before enemy missiles reach his soil, he has about eight minutes to decide what to do.

Yet, in the Norway episode, the information needed for such a momentous decision was unclear. Although eventually the Norwegian rocket fell into the ocean, it triggered a heightened level of alert throughout the Russian strategic forces, according to testimony to the U.S. Congress, and other sources, and marked the first time a Russian leader had to use his nuclear briefcase in a real alert.

Now that the superpower tensions have eased, so have the chances of a misunderstanding leading to nuclear war. But some Western experts say the Norway rocket episode may not be the last.

The reason is that Russia's system of early warning of a possible attack, and command and control of nuclear forces, is suffering many of the same problems plaguing the entire military. Russia inherited from the Soviet Union a system of radars and satellites, but after the Soviet break-up, many are no longer on Russian soil. Russia's six-year economic depression has led to hardship for many officers, including many who work in nuclear command installations, who receive low pay and lack permanent housing. The radar-and-satellite system is vulnerable because there are gaps in the network, which will grow more serious this year as yet another Russian radar station is closed in Latvia.

The prospect of a mistake "has become particularly dangerous since the end of the Cold War," Vladimir Belous, a

retired general and leading Russian strategist, wrote recently. He added that "a fateful accident could plunge the world into the chaos of a thermonuclear catastrophe, contrary to political leaders' wishes."

The degradation of Russia's early-warning system comes as its strategic forces are also shrinking. The forces made up of nuclear-armed submarines, long-range bombers and intercontinental ballistic missiles built by the Soviets during the Cold War are declining dramatically in both numbers and quality. Within a decade, experts predict, Russia will have a nuclear arsenal just one-tenth the size of the Soviet Union's at the peak of the superpower rivalry, because of arms control treaties, looming obsolescence and Russia's economic depression.

The process is posing painful questions for Russia's political and military elite. They want to preserve Russia's place as a global power but cannot support the colossal forces and intricate systems that made up the Soviet nuclear deterrent.

What makes the radar and satellite gaps worrisome is that Russia still adheres to nuclear doctrines of the Soviet era. The overall deterrence concept is known as Mutual Assured Destruction, under which each side is held in check by the threat of annihilation by the other. One part of this cocked-pistols approach is "launch-on-warning," in which both sides threaten that if attacked they will unleash massive retaliation, even before the enemy warheads arrive. The idea is that such a hair-trigger stance will discourage either from attempting to strike first.

Russia also inherited from the Soviet Union a second, related approach, which is to preserve the ability to launch a retaliatory strike even after the enemy's warheads have hit. This is called "launch-on-attack." In Moscow, massive underground bunkers and a secret subway were built to protect the Soviet leadership so they could launch a retaliatory strike.

Lost in the Bureaucracy

The message from the Norwegian Foreign Ministry was routine. On Dec. 21, 1994, it sent out a letter to neighboring countries, including Russia, about the impending launch of the Black Brant XII, a four-stage research rocket, between Jan. 15 and Feb. 10, depending on weather conditions.

But the letter got lost in the Russian bureaucracy and never made it to the radar crews, as had past notifications. Norway had launched 607 scientific rockets since 1962. But the Black Brant XII was bigger than any of those. The rocket was a cooperative effort with the U.S. National Aeronautics and Space Administration, and was built with surplus U.S. rocket engines.

According to Peter Pry, a former CIA official who chronicles the episode in a coming book, "War Scare," the rocket "resembled a U.S. submarine-launched, multiple-stage ballistic missile." Theodore A. Postol, a professor at MIT, said that the Norwegian rocket may well have looked to the radar operators like a multistage missile launched from a Trident submarine. The launch occurred in a region considered, during the Cold War, to be a likely corridor for an incoming ballistic missile attack.

Anatoly Sokolov, the commander of the Russian radar forces, recalled shortly afterward that "what happened was an unscheduled training exercise. . . . We all found ourselves under stress." He said, "An officer on duty reported detecting a ballistic missile which started from the Norwegian territory. What kind of missile is it? What is its target? We were not informed. . . . If it had been launched on an optimal trajectory, its range would have been extended to 3,500 kilometers [2,175 miles], which, in fact, is the distance to Moscow."

"The thing is," he added, "the start of a civilian missile and a nuclear missile, especially at the initial stage of the flight trajectory, look practically the same."

The Black Brant XII triggered a tense chain reaction in Russia. According to Nikolai Devyanin, chief designer of the Russian nuclear "suitcase," the radar operators were under crushing pressure. They remembered how Mathias Rust, a German youth, flew a small plane through Soviet air defenses in 1987 and landed it in Red Square, shaking the Soviet hierarchy to its foundations. Moreover, in five or six minutes, the Norwegian missile could hit the Kola Peninsula, where Russia's nuclear-armed submarines are based.

Devyanin has said the radar operators could be reprimanded for sending out a false, panicky signal. But they also feared

it was a real threat. So they decided to issue an alert that it was an unidentified missile, with an unknown destination.

The alert went to a general on duty. He, too, decided that it was better to send on the alert to the highest levels, than to be blamed for a disaster. One factor, Western officials said later, might have been fear that the lone missile would release a huge, debilitating electromagnetic pulse explosion to disarm Russia's command-and-control system, as a prelude to a broader onslaught.

At that point, the Russian electronic command-and-control network, known as Kazbek, had come to life.

The duty general received his information from the radar operator on a special notification terminal, Krokus. He then passed it to the Kavkaz, a complex network of cables, radio signals, satellites and relays that is at the heart of the Russian command and control. From there, it caused an alert to go off on each of the three nuclear "footballs" in the Russian system: one with Yeltsin, one with then-Defense Minister Pavel Grachev and a third with the chief of the General Staff, then Mikhail Kolesnikov. The black suitcases were nicknamed Cheget.

The command-and-control system "was now operating in combat mode," Devyanin said. Yeltsin immediately got on the telephone with the others holding the black suitcases, and they monitored the rocket's flight on their terminals. (The actual launch orders are not given from the suitcase, only the permission to fire. The launching process, including ciphers, is controlled by the military's General Staff, which, in some circumstances, is authorized to act on its own.)

Devyanin noted a strange irony. The Cheget suitcase was a product of the final phase of the Cold War, during the tense early 1980s, when Soviet leaders feared a sudden attack launched from Europe or nearby oceans. They needed a remote command system to cut down reaction time.

The suitcases were put into service just as Mikhail Gorbachev took office. Gorbachev, however, never used them in a real-time alert, officials said. The first serious alert came only after the end of the Cold War, on Yeltsin's watch.

Devyanin said that at the time he was disturbed by the way a misplaced document led to such high-level confusion. "The safety of mankind should not depend on anyone's carelessness," he said.

The day after the incident, Yeltsin announced that he had used the nuclear briefcase for the first time. Many in Russia dismissed his comment as a bit of bravado intended to divert attention from the debacle of the Chechen war, then just beginning to unfold.

Even today, Russian officials brush aside questions about the incident, saying it has been overblown in the West. Vladimir Dvorkin, director of the 4th Central Research Institute, a leading military think tank, said he saw no danger from the Norwegian alert, "none at all."

He added, "It's very difficult to make a decision" to launch, "maybe even impossible for civilized leaders. Even when a warning system gives you a signal about a massive attack, no one is ever going to make a decision, even an irrational leader alarmed that one missile has been fired. I think this is an empty alarm."

But the incident did set off alarms. Former CIA director R. James Woolsey told Congress in 1996 that the Russians went on "some sort of" alert, "not a full strategic alert, but, at least, a greater degree of strategic inquisitiveness."

Bruce Blair, a senior fellow at the Brookings Institution in Washington who has written extensively on the Soviet and Russian command-and-control systems, said a signal was sent to the Russian strategic forces to increase their combat readiness, but the crisis then ended. Blair said the significance of the episode was the confusion that marked the period during which Yeltsin would have had to make a real "launch-on-warning" decision. Blair pointed out that the Soviet Union and Russia have been through coup, rebellion and collapse over the last decade, and a leader may well be called on to make crucial decisions at a time of enormous upheaval.

Postol said, "The Norwegian rocket launch is an important indicator of a serious underlying problem. It tells us something very important: People are on a high state of alert, when there is not a crisis. You can imagine what it would be like in a high state of tension."

Pry said that there have been other false alarms in the nuclear age, but none went as far as Jan. 25, 1995, which he

described as "the single most dangerous moment of the nuclear missile age."

'Partially Blind' Russia

The first radar-blip warning of the Norwegian rocket came from the early-warning system built around the periphery of the Soviet Union. The concept of "launch-on-warning" -- a quick-draw response to nuclear attack -- depends on swift, reliable warning.

"Get it right, it makes no difference to us what kind of missile it is, meteorological, testing or combat," Sokolov, the Russian radar forces commander, said after the Norwegian episode. He said the radars are the "eyes and ears of the president."

But the Soviet collapse has muffled those sensors. The Soviet radar system was being modernized when the country fell apart. One of the new replacement radars, in Latvia, was torn down in May 1995. Russia won a temporary reprieve against closing two older radars in Latvia, but that agreement expires in August. Latvia recently announced it will not let Russia renew. The radar is one of those covering the critical northwestern direction.

Meanwhile, other radars used by Russia have been left in Ukraine, at Mykolayiv and Mukacheve; in Azerbaijan, at Mingacevir; and Kazakhstan, at Balqash. Some are functioning, but there have been disputes over finances and personnel. Russian authorities hope to complete an unfinished radar in Belarus to compensate for the loss in Latvia, but the prospects are uncertain.

Overall, only about half the original radars remain inside Russia. In addition, the system of satellites used for detecting missile launches is also depleted. There are two groups of satellites. One group in a high elliptical orbit monitors U.S. land-based missile fields, but cannot see missiles launched from the ocean. Russia has two other geostationary satellites but they do not provide complete coverage of the oceans, where U.S. Trident submarines patrol.

Postol has calculated that Russia has serious vulnerabilities in its early-warning network, especially given the highly accurate Trident II sea-launched ballistic missile system. For example, Russia could entirely miss a missile launched toward Moscow from the Pacific Ocean near Alaska because of radar gaps, he said.

"Russia is partially blind -- that's absolutely correct," said a former air defense officer.

Admonished by Yeltsin

In January 1997, a group of workers at a small state-owned institute near St. Petersburg went on strike. The workers at the Scientific Production Corp. Impuls said they had not been paid for eight months.

The strike touched a nerve among those who knew about Impuls. Its founder, Taras Sokolov, pioneered the Russian nuclear command system, known as Signal. The workers at Impuls said they were fed up and would not go back to work until paid.

Within days, Defense Minister Igor Rodionov took an extraordinary step. He too was frustrated. He had devoted his career to the conventional army, but it was disintegrating before his eyes. Yeltsin was ill, and Rodionov could not reach him on the phone. Finally, he wrote an alarming letter to Yeltsin. He said the command-and-control systems for Russia's nuclear forces -- including the deep underground bunkers and the early-warning system -- were falling apart.

"No one today can guarantee the reliability of our control systems," Rodionov said. "Russia might soon reach the threshold beyond which its rockets and nuclear systems cannot be controlled."

A retired colonel, Robert Bykov, who had worked in some of the military's electronic command systems until 1991, echoed Rodionov's comments in an article he wrote for a mass-circulation newspaper, Komsomolskaya Pravda. Bykov said Rodionov was "absolutely correct." He added, "Even in my period of service, the equipment ceased functioning properly on more than one occasion, or certain parts of it spontaneously went into combat mode. You can imagine what is happening now."

In a lengthy interview, Bykov said he was the subject of an investigation by the Federal Security Service after the article

appeared. Recalling his experiences, he said that periodically the central command system went into a "loss of regime" mode, which he described as a neutral position, where it could not send out commands. He said there were also a few incidents in which individual missile silos or regiments would report to the center that they were in "combat mode," but he said the main system could prevent any accidental launch.

Bykov's article had an impact outside Russia. It was picked up in a CIA report outlining Rodionov's concerns about nuclear command and control. The Washington Times disclosed the report on the day Rodionov arrived in Washington in May 1997 for a visit.

Rodionov recalled in an interview that he eventually had a meeting with Yeltsin. "You shouldn't have said that," Yeltsin admonished him, he said.

Rodionov said he drew up a plan for army reform that included drastic cuts in nuclear weapons, but never got a chance to take it out of his briefcase. He was dismissed and replaced by Igor Sergeyev, the head of the strategic rocket forces -- a move crystallizing the new emphasis on nuclear deterrence.

Russian officials have repeatedly denied that the strategic forces command system is weakening. They say it has rigid controls against an accidental launch or theft. The U.S. strategic forces commander, Gen. Eugene Habiger, visited Russian command centers last fall and said they were "very much geared to a fail-safe mode" in which any command level "can inhibit a launch" of a missile.

But Sergeyev has acknowledged the system is growing old; most of the command posts were built more than 30 years ago. The rocket forces are also suffering shortages of trained personnel and severe social problems such as a lack of housing for 17,000 officers. A well-informed Russian expert on the command system said, "Today it's not dangerous but tomorrow it might be. It is going down. It has not reached the critical point. But the trends are down -- days when designers are not paid, when money is not allocated for upkeep."

In the coming decade, Russia is to move toward a drastically curtailed nuclear force, one that will be just larger than those of China or of France and Britain combined. Some Russian strategists are already rethinking the Cold War doctrines that called for Moscow to deploy vast weapons systems carrying thousands of warheads for attack on the United States. With fewer weapons, limited finances, gaps in early warning, and the dissipation of Cold War rivalry, some analysts have urged Russian and the United States to take nuclear weapons off hair-trigger alert.

Lowering the Risk

Blair, the Brookings analyst, has been the chief proponent of "de-alerting," which he said "means we increase the time needed to launch forces from the current minutes to hours, days, weeks or longer, through a variety of measures like taking the warheads off the missiles." He added, "It would take them out of play, so there is a much lower risk of their mistaken use."

But in Russia, there is no clear sense of direction. If anything, analysts here said they think Russia may drift away from launch-on-warning. This is driven by necessity: The warning system is deteriorating. "Basically, the shift is being made already," said the Kremlin defense strategist.

However, others said the change is not certain. The Russian military elite was trained to think in global terms but now faces the reality of becoming a second-class power at a time of overwhelming American superiority. Russia may be reluctant to give up the threat of a launch-on-warning, at least formally.

"I think there will be some kind of transition period, 10 to 15 years," said Anatoly Diakov, director of the Center for Arms Control, Energy and Environmental Studies here. "Russia will save the opportunity to return to launch-on-warning, just in case. This is some kind of hedge against adverse developments. But the main priority will be a transition from launch-on-warning to a retaliatory posture."

Asked whether Russia should give up launch-on-warning, Dvorkin said, "On even days, I think we should reject it. On odd days, I think we should keep it."

"Why?" he asked. "Because how is launch-on-warning dangerous? It's dangerous with a possible mistake in making the

decision to launch." But, he added, "making this mistake in peacetime, a time like now, the likelihood is practically zero. Because the situation is quiet. Only if there is some increase in tension between countries, then the likelihood of a mistake increases."

Just the fact of having launch-on-warning, he said, would discourage both countries from returning to Cold War tensions. "We must sit quietly," he added, "like mice in our nook."

LAUNCH

Russia's Nuclear Command and Control System

EARLY WARNING SYSTEM

1. The system uses radar and satellites to detect possible nuclear weapons deployed against Russia. If a serious threat is identified, operators relay the signal to the military's

general staff.

2. MILITARY'S GENERAL STAFF

The duty general receives the warning on a terminal called Krokus.

3. KAVKAZ

The warning is passed on via Kavkaz, a network of cables, radio signals and satellites.

4. CHEGET SUITCASE CARRIERS

The warning triggers an alarm to go off on each of three special suitcases, called chegets, equipped with terminals to monitor the situation. The three suitcase holders confer. If nuclear threat appears real, the President issues permission to launch warheads.

5. LAUNCH?

Permission travels back to General Staff, where it is verified. General staff issues command for deployment of weapons and forces.

SOURCES; Rocket Forces of Russia, Past and Future, interviews with Russian officials. Map source: Center for the Study of the Problems of Arms Control, Energy and Ecology, Moscow

in 1995 from Andoya. Detected by Russian radar, the scientific rocket was being used to study the Northern Lights.

<http://www.washingtonpost.com>

CAPTION: Norway launched a Black Brant XII (above) CAPTION: Scientific rocket launched scare. CAPTION: Russian troops scanned their monitors inside the Strategic Rocket Forces Command Post during early January. CAPTION: Norwegian government letter informing Russia of a scientific rocket launch got lost in the Moscow bureaucracy.

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